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VIRGIN ISLANDS AGRICULTURAL EXPERIMENT STATION
ST. CROIX, VIRGIN ISLANDS, U. S. A.

Under the supervision of the
UNITED STATES DEPARTMENT OF AGRICULTURE

REPORT OF THE VIRGIN ISLANDS AGRICULTURAL EXPERIMENT STATION

1929

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Issued March, 1930

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VIRGIN ISLANDS AGRICULTURAL EXPERIMENT STATION, ST. CROIX

[Under the supervision of the Office of Experiment Stations, United States Department of Agriculture]

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[2] Appointment effective June 1, 1929.

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Washington, D. C. March, 1930

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REPORT OF THE DIRECTOR

By J. B. Thompson

During the fiscal year 1929 the island was visited by an unusually destructive hurricane which followed a prolonged period of dry weather. The hurricane severely damaged buildings and growing crops generally, and the drought had a serious effect on the yield of sugarcane. Approximately 4,000 tons of sugar was manufactured in St. Croix this year as compared with 12,000 tons last year.

Activities at the station were continued along the same general lines as in other years. Reconstruction work was made necessary by the hurricane and demanded much of the time and attention of the various members of the station staff.

In the animal husbandry division the work was continued with some minor changes. G. A. Roberts was appointed chief of this division beginning June 1, 1929. The reapplication of a revised Federal quarantine regulation affecting the shipment of cattle from the Virgin Islands into Porto Rico, made it mandatory to spray or dip such cattle twice with an intervening period of 7 to 14 days prior to shipment. The regulation also required that the spray or bath used be an officially approved preparation containing 0.22

per cent arsenious oxide. The duty of supervising dippings and furnishing shippers with the necessary certificates showing that the provisions of the regulation had been complied with devolved upon the animal husbandman and veterinarian in St. Croix and upon W. M. Perry in St. Thomas. During the last three months of the fiscal year 756 head of cattle were sprayed or dipped twice on 28 occasions preparatory to shipping them to Porto Rico.

In the horticultural division, the growing of tomatoes, eggplants, peppers, and Bermuda onions for marketing in New York was continued notwithstanding the fact that the market prices were again comparatively low. In an interesting experiment conducted to obtain production data on tomato seed in the Virgin Islands, a quarter-acre plat which was planted with the Marglobe variety yielded approximately 22 pounds of seed, or at the rate of 88 pounds per acre.

The work in agronomy included studies of varieties of sugarcane and the best cultural methods for the crop, and a comparison of the merits of a large number of miscellaneous forage plants. Cane-breeding work has been retarded by a tendency of the cane to arrow indifferently on the station grounds. Promising forage crops tested included among the legumes, cowpeas, pigeon peas, and velvetbeans, and among the introduced grasses molasses grass (*Melinis minutiflora*), and Igoka grass (*Capriola* sp.).

The agriculturist for St. Thomas and St. John continued his efforts to improve farm conditions on these islands. Working in cooperation with the Bureau of Plant Industry, United States Department of Agriculture, he introduced from California 1,000 cuttings of the Muscat of Alexandria grape which will be used in establishing experimental vineyards on the various soil types of the two islands. Progress was made in his efforts to encourage the more general planting of onions and tomatoes for the local market. Working in cooperation with the department of education, he encouraged and assisted in the school-garden projects. In this connection two school gardens in St. John received an income of $112 from the sale of onions alone. The agriculturist obtained a number of Single Comb White Leghorn hens from the station in St. Croix and from them made an average profit above feed costs of $1.20 per bird in a period of six months. This improved strain is being distributed on the islands and the station birds are being used profitably by students of the St. Thomas schools who are making a study of poultry breeds and types.

SWEETPOTATO WORK

Of the original 1,300 seedling varieties of sweetpotato previously developed at the station, 50 have been grown in comparison with Black Rock, the standard local variety. Table 1 gives the average annual yield per acre of 12 high-yielding varieties and their increase in yield over that of the Black Rock variety.

TABLE 1.—*Comparison of annual yields of 12 St. Croix seedling sweetpotatoes and increase over Black Rock, the standard native variety*

Seedling No.	Length of test		Average yield per acre per planting		Increase in yield of seedlings over that of Black Rock
	Years	Plantings	Seedling	Black Rock	
			Pounds	*Pounds*	*Per cent*
46	6	15	17,837	12,217	46.0
794	3	5	16,835	12,592	33.7
447	3	6	18,796	14,835	26.7
441	3	10	13,547	11,177	21.2
749	3	6	14,549	12,618	15.3
426	3	10	13,786	11,957	15.3
828	3	6	11,891	10,394	14.4
539	3	6	13,264	11,717	13.2
162	5	14	16,705	14,796	12.9
567	3	6	13,917	12,745	9.2
550	3	6	12,283	11,458	7.2
463	3	6	10,824	10,633	1.8

No 46 is the La Verne variety, which held an unbroken record in point of yield over the Black Rock in each of the 15 different plantings in which the two varieties were compared. When this seedling is grown in heavy soil, however, the roots are inclined to be excessively large and coarse, and poor in table quality. No. 794 which ranked third in point of yield is an outstanding variety of much promise. This is a second-generation seedling of the Key West "yam," having been grown originally in 1924 from a Payne Vine seed, which in turn had been produced from a seed of the Key West "yam" in 1922. No. 794 is an attractive, white variety with smooth roots of relatively uniform shape. In the station work a proportionately large number of the roots of this variety were noted to be of a desirable intermediate size. The roots of this potato sprout less readily than do those of the Black Rock, and, consequently, can be stored for a longer period. The quality is good, being not so sweet or moist as is the case with the Black Rock. The ability of No. 794 to resist drought is a very important character in its favor under local conditions. In another planting of 50 varieties during the dry weather, No. 794 yielded at the rate of 2,504 pounds per acre, whereas the other varieties failed altogether. Grown on a $\frac{2}{31}$-acre plat, No. 794 yielded 1,332 pounds, or at the rate of 20,646 pounds per acre. Assuming 55 pounds to the bushel, it will be found that the yield equaled 375 bushels per acre. Although tests of this variety have not covered an extended period of time and have been made on comparatively heavy land at the station, its exceptional behavior has encouraged preparations permitting distribution of many of the draws during the next planting season.

INTRODUCTION OF ECONOMIC PLANTS

Many interesting and valuable plant introductions were received during the year. A shipment of strawberry plants, including the varieties Missionary and Klondike, was received, but only a portion of the Missionary variety survived. Some of these were distributed for planting on the Spring Garden estate at an elevation of approximately 900 feet, where they are said to be making vigorous growth and multiplying rapidly. Some 200 rooted vines have been established from cuttings of 15 different varieties of the Vinifera grape. These were obtained from California through the Bureau of Plant Industry of the United States Department of Agriculture. One hundred and forty-three nuts of the dwarf Mangipod variety of coconut were received from the Philippines through the courtesy of Arthur E. Lingborg, local director of education, but apparently were devitalized by the long ocean voyage, since they failed to germinate. Other introductions included the carob (*Ceratonia siliqua*), Arizona ash (*Fraxinus velutina*), *Acacia cyanophylla*, *A. saligna*, and *A. pendula* from California, the sausage tree (*Kigelia pinnata*) from the Panama Canal Zone, and *Vitex negundo incisa*, *Triplaris americana*, *Paliurus spinachristi*, *Schinus dependens*, *Gleditsia sinensis*, and *Dodonaea viscosa* from the Office of Foreign Plant Introduction, United States Department of Agriculture. Nine varieties of water-lilies (*Nymphaea* spp.) were introduced from California and the pool in which they are growing has attracted much attention. A few mangosteen plants were received through the local department of education but are not making satisfactory growth.

PLANT DISTRIBUTIONS

Economic and ornamental plants were grown in considerable numbers in the station nurseries for distribution to the public. General distribution included 453 Cavendish banana plants, 323 coconut trees, 80 avocado trees, 64 grapevines, 2,400 *Pithecolobium unguiscati* hedge plants, 152 orange trees, and 1,069 miscellaneous plants. These distributions do not include the several thousand vegetable plants which were given out by the horticultural division.

BANANAS

As a result of dry weather conditions in the summer of 1928 and the hurricane of September 12 and 13, the banana planting failed to fruit. Heavy rains, however, followed the storm of September and within the last few months the plants have begun to send out numerous bunches of fruit. At the close of the fiscal year (June 30, 1929) the planting was again in good condition.

REPORT OF THE ANIMAL HUSBANDMAN AND VETERINARIAN

By G. A. Roberts

The writer entered upon his duties June 1, 1929, hence some of the work recorded in this part of the report was not under his immediate supervision.

CATTLE

The native cattle are descended largely from some that came from Senegal on the French West-African coast. Numerous cattle showing traces of Zebu blood are also to be found on the islands. Both of these strains and crosses between them appear to be strong and thrifty, but usually neither strain produces animals of the best beef type or heavy dairy type.

During the year milk and butterfat production records were kept of seven cows. Table 2 gives their milk and butterfat yields.

TABLE 2.—*Comparison of milk and butterfat yields of seven cows for the year ended June 30, 1929*

	Length of time in milk	Total yield of milk	Total yield of butterfat
	Days	*Pounds*	*Pounds*
Blossom (native)	275	4,170	173.5
Alma (native)	365	3,339	193.9
Mary (native)	242	3,310	159.0
Berry (grade Holstein)	302	2,948	128.8
May (purebred Guernsey)	365	2,100	84.5
Cherry (native)	256	2,065	99.3
Ruby (grade Shorthorn)	306	1,863	83.5

The cows subsisted wholly on guinea-grass pasturage. The calves were removed at birth from their dams and fed by hand; consequently, all the milk produced was obtained and weighed. May is a purebred Guernsey with her first calf.

NOTES ON THE STATION STOCK

With the beginning of the fiscal year 1929 the station had on hand 10 work mules, 1 old horse, 13 work oxen, 9 young steers, 1 registered Shorthorn herd bull, 1 registered Guernsey herd bull, 2 purebred Guernsey cows, 11 grade and native cows, 5 grade and native heifers, and 9 grade and native calves (4 males and 5 females). During the year the herd of cattle was increased by 11 births—6 females and 5 males. Of these, 1 female and 1 male died. One old work ox and 2 young steers also died. Two of the mules died and 1 mule was purchased.

The chickens, of which a good flock of Single Comb White Leghorns had been developed, were almost completely destroyed by the hurricane of September, and the few that survived were transferred to St. Thomas.

MISCELLANEOUS ACTIVITIES

An old quarantine regulation governing the shipment of cattle into Porto Rico from tick-infested areas, including the Virgin Islands, which had been suspended as an economic measure during the World War, was again made operative during the year. The ruling provides that cattle shipped from the Virgin Islands to Porto Rico must first have been dipped twice in an approved arsenical bath with an intervening period of 7 to 14 days. The animal husbandman was made responsible for carrying out the provisions of the ruling, and had to furnish shippers with certificates showing that the requirements of the law had been complied with. For the convenience of cattlemen who were not prepared to dip, the enforcement of the law was temporarily modified to permit sprayings in lieu of dippings until June 30, 1929. For the 3-month period ended June 30, 28 spraying inspections were made and 756 head of cattle were sprayed or dipped twice. During the same period certificates were issued covering 7 shipments of cattle to Porto Rico.

In June the animal husbandman was called upon to make a diagnosis for 10 horses, 6 mules, 9 head of cattle, and 4 dogs, all of which were then treated. These animals belonged to various persons, institutions, and corporations scattered throughout the island.

Post-mortem examination was made of 1 mule, 3 work oxen, and a cow and a calf. The mule had been suffering from an edematous swelling of the head and was therefore shot. The cow had been unable to rise for several days and was killed by her owner. Post-mortem examination of the mule and the cow gave no information of value. Two of the work oxen died shortly after they had been sprayed with an excessively strong arsenical solution and showed typical lesions of arsenical poisoning. The solution had been mixed by the ranch manager and applied without first having been tested. Post-mortem examination of the third work ox, which was killed because of old age, revealed the presence of a few stomach worms (*Haemonchus contortus*) in the fourth stomach, and a few nodules on the wall of the small intestine. The calf, a purebred Guernsey belonging to the station, had been in very thin flesh for some time. Post-mortem examination revealed the presence of many stomach worms (*H. contortus*) in the fourth stomach, a few nodular worms (*Oesophagostomum radiatum*) in the small intestine, and a few whipworms (probably *Trichuris ovis*) in the large intestine.

As a rule the purebred Guernsey and grade-Holstein calves raised at the station have not been as thrifty as the native calves. This may be due to the greater susceptibility of the former to internal parasites. Heavy infestations of the pastures with these parasites would greatly militate against the improvement of the cattle of the island for beef and dairy purposes. During a 5-month sojourn in one of the near-by West Indian islands, the writer found that gross infestations with these parasites very seriously affected calf raising. Many of the dairymen there claimed that, in order to raise calves at all, it was necessary to stable them for a year preparatory to turning them on pasture.

REPORT OF THE HORTICULTURIST

By Claud L. Horn

EXPERIMENTS WITH TRUCK CROPS

Experiments made to determine the possibility of marketing tomatoes, eggplants, peppers, and Bermuda onions in New York during the winter were continued. The seed of all the varieties was sown in the seed beds August 6, 7, and 8, 1928.

The Bonnie Best variety of tomato was transplanted September 19, 20, and 21 on a 2.7-acre plat. Nine shipments, totaling 332 crates, were made to New York between December 1 and March 15. The tomatoes brought from $0.75 to $2.50 per crate, with an average of $1.23. Sixty-two per cent of the crop was marketed as grade 1, and 38 per cent as grade 2. The hurricane of September damaged the seedlings while they were in the seed bed, and as a result only 75 to 80 per cent of a stand developed in the field. Since no replants were available for use, the yield was accordingly reduced. The cost of production was $0.80; harvesting and preparing for market (including crates and wrapper), $0.85; and marketing, $1.08 per crate. The total cost of production and marketing was $2.73 per crate, which was $1.50 more than the average selling price.

The Black Beauty variety of eggplant was transplanted September 21 on a 0.7-acre plat. Five shipments, totaling 95 crates, were made to New York between December 21 and February 15. The eggplants brought from $0.50 to $5 per crate, with an average of $2.27. Fifty-two per cent of the crop was marketed as grade 1 eggplants, and 48 per cent as grade 2. Eggplants which were shipped during the early season reached the market in good condition, but those shipped later decayed in transit. It is believed that these later fruits were inoculated in the field with a rot organism, because many of the plants in the field were affected by wilting and carried fruits that were damaged by rot. Approximately 50 per cent of the plants were killed by the disease by midseason and production was accordingly greatly reduced. The cost of production was $1.08; harvesting and preparing for market (including crate and wrapper), $0.49; and transportation and marketing, $1.20 per crate. The total cost of production and marketing was $2.77 per crate, which was $0.50 more than the average selling price.

The Ruby King variety of pepper was transplanted September 22 on an 0.11-acre plat. Six shipments totaling 13 crates were made to New York. Eighty-five per cent of the crop was marketed as grade 1 peppers, and 15 per cent as grade 2. The cost of production was $1.15; harvesting and preparing for market (including crate), $0.54; and transportation and marketing, $1.30; or total cost of $2.99 per crate. The peppers brought from $2 to $6 per crate, with an average of $3.25, which left a profit of $0.26.

The Yellow Bermuda variety of onion was transplanted October 1 to October 10 on a 0.7-acre plat, and the first of three shipments totaling 71 crates was made March 9, and the last March 26. The hurricane of September considerably damaged the seed bed. Sufficient plants had been provided for a planting of 4 acres of land, but after the hurricane plants from only 0.7 of an acre remained available for use. These were left in such a weakened condition that many of them died after they were transplanted. As a result, there was only about 80 per cent of a normal stand, the yield was accordingly reduced, and the cost of production increased. The total cost of production and marketing per crate was $2.68, of which $1.12 was for production, $0.56 was for harvesting and preparing for market (including crate), and $1 was for transportation and marketing. Thirty-one per cent of the crop was marketed as grade 1 onions, and 69 per cent as grade 2. The onions brought from $1 to $2.50 per crate, with an average of $1.62, which was $1.06 less than the average cost of production and marketing.

It should be stated that the above-mentioned figures do not quite indicate the total production on the areas mentioned. In addition to shipments of produce to New York, there were obtained and marketed locally from the plantings 6 crates of tomatoes, 16 crates of eggplants, 4.32 crates of peppers, and 58 commercial crates of Bermuda onions.

The work done by the station with vegetables has been an incentive to many of the poorer classes to supplement their former dietary of fish and cornmeal with locally grown fresh vegetables.

TOMATO-SEED PRODUCTION

A ¼-acre plat was planted with tomatoes of the Marglobe variety for the purpose of obtaining data on seed production. The yield obtained was approximately 22 pounds, or at the rate of 88 pounds of seed per acre. The cost of the seed was $1.39 per pound, of which amount $0.27 was spent for harvesting and extracting the seed. The seed appeared to be of good quality and will be tested in the temperate climate of the United States. If it makes satisfactory growth there the growing of tomato seed on a commercial scale in the Virgin Islands might prove to be feasible. One ton of Marglobe tomatoes yielded 12.35 pounds of seed.

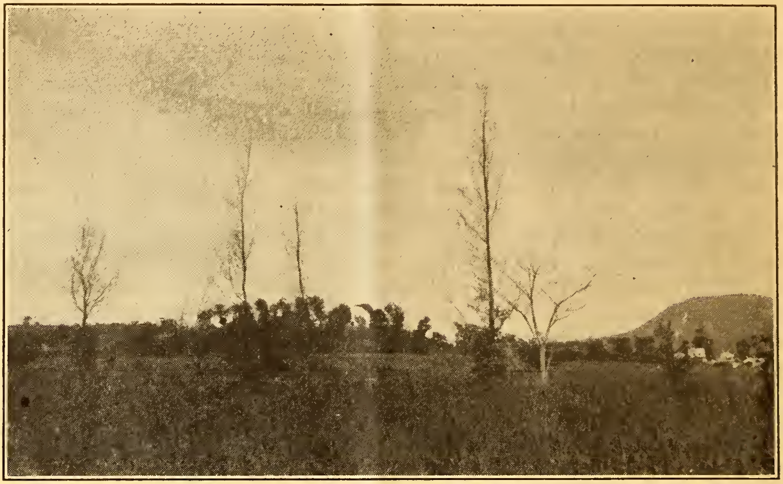

FIGURE 1.—Eucalyptus trees damaged by the hurricane of September, 1928

AVOCADOS

Of the seven imported varieties of avocados that were planted three years ago, Family and Trapp bore crops of large but immature fruits at the close of the fiscal year (June 30, 1929). The Trapp variety had not previously borne, but the Family variety bore a few fruits that were immature when they were blown down by the hurricane of September.

A diseased condition of the avocado, manifesting itself by the dropping of the leaves and the dying back of some of the branches, continuing in severe cases until the entire tree is killed, was observed during the year. This disease is especially destructive to seedlings which are a few months old. Studies are being made to determine the cause of the trouble.

Seven new avocado varieties were introduced at the station for trial during the year. Since the avocado fruit is obtainable in St. Croix during only a short period of the year, the station is endeavoring to lengthen the ripening season by introducing new varieties.

SPRAYING NOTES

Spraying experiments, conducted in the hope of developing measures for the control of the pustule scale (*Asterolecanium pustulans*) on fig trees, indicated that a 2 per cent paraffin-oil emulsion applied once every 60 days will effect complete control. The experiment is being continued to determine the minimum spraying requirement for effective control.

ARBORETUM

In general the plantings in the arboretum made very little growth during the year, probably on account of the hurricane of September. None of the plantings were totally injured by the storm, but the tall-growing eucalyptus trees were killed back to within 4½ feet of the ground. (Fig. 1.) Additions to the arboretum during the year included *Toluifera balsamum*, a beautiful South American park tree; *Adenanthera microsperma*, a quick-growing timber tree yielding a rich brown wood; *Ficus bussei; Artocarpus communis*, the breadfruit tree; and *Albizzia adianthifolia*, a near relative of the locally grown Thibet tree.

REPORT OF THE AGRONOMIST

By Maybin S. Baker

SUGARCANE

The total yield of sugar in St. Croix for the season 1928–29 is estimated at approximately 4,000 short tons, which is only one-third of the amount produced in 1927–28. The acute decline in yield was due largely to the extremely dry weather following the 1927–28 harvest and, to a lesser extent, to the hurricane of September, 1928. At the present time (June 30, 1929) the prospects for a larger crop in 1930 are promising.

VARIETIES

Results obtained from variety comparisons have been inconclusive and unsatisfactory because of adverse weather conditions. It is, however, interesting to note that some of the P.O.J. (Java) varieties, notwithstanding extremely unfavorable conditions, produced second and third ratoons averaging 20 tons of cane per acre, the juice of which contained by analysis 17 per cent of sucrose. Several promising varieties of the P.O.J. group are being added to the variety plantings. Maximum economy in the production of sugar in St. Croix demands the selection of a variety withstanding dry weather conditions, ratooning well, and standing relatively high in percentage of sucrose. For a dry climate, such as obtains in St. Croix, the P.O.J. canes have much to commend them.

Twenty-seven new varieties are growing in quarantine in St. Thomas and should soon be ready for release and addition to the variety plantings. These include the Guadeloupe seedlings G115, G117, G119, G136, G138, G140, G153, G162, G169, G187, G197, and G204; the Barbados seedlings B11569 and B8069; the Mayaguez (Porto Rico) seedlings M7, M14, and M28; the Cuban hybrid CH64(12); the United States Department of Agriculture seedlings

US541 and US785; the Java series P.O.J. 36, P.O.J. 2364, P.O.J. 2714, P.O.J. 2725, and P.O.J. 2878; the Hawaii seedling H12029, and the variety Badila.

SEEDLINGS

Cane arrowed very sparsely in 1929. Twenty-five arrows were, however, collected and the 27 seedlings grown from them were planted in the nursery.

The nursery contained 811 seedling varieties of the 1928 series. Of these, 109 of the most promising kinds were selected for superior field characters and planted in increase plats. The increase plats, containing 181 seedlings grown in 1927, were badly damaged by the hurricane and the heavy rains that followed. The cane that survived was cut for replanting. Tests were made of 79 numbers from this lot but none proved to be especially high in sucrose content.

In the 1926 series, the juice of 18 seedlings contained 20 to 21.6 per cent of sucrose. Of this number, SC 26/158 and SC 26/102 ranked highest in sucrose content of juice, with 21.62 and 21.35 per cent, respectively. On the basis of cane tonnage, SC 26/137 again ranked highest of the seedlings, with a sucrose content of juice of 18.32 per cent. Repeated tests of these varieties to determine the time of maximum sweetness indicate a wide range of dates of maturity for the various seedlings.

A comparison of the stooling characters of the original seedling plants of the 1926 group and the same varieties when they were later grown from cuttings was made to learn whether a correlation existed between the number of canes in the original stool grown from the seed and those in stools of the same variety when grown from cuttings. It is realized that the settlement of this question in the affirmative would make possible the early elimination of large numbers of worthless seedlings with resulting economy of time and labor. The work has not as yet, however, disclosed any high degree of correlation. Seedling SC 26/1, for example, had for a parent SC 12/4, a vigorous stooling cane. The original stool of SC 26/1 contained 1 rather weak cane and 2 shoots from which 6 cuttings weighing 10 ounces were made. These seed pieces produced stools containing per stool an average of 8 canes, each weighing 2.7 pounds. A second planting of seed pieces, taken from the stools producing the 8 canes, produced stools of 6 to 8 canes, each weighing 2.5 pounds. On the other hand, original stools containing a large number of canes per stool were noted to drop to a smaller number of canes per stool. The writer is of the opinion that weather and soil conditions control the size of stool rather than some inherent character. SC 26/1 ranked thirteenth of 18 1926 seedlings deserving further trial. The original stool would have been discarded had the usual method of selection been followed. In addition to the original selections, 20 additional selections were made from the first-ratoon stools left in the 1927 seedling nursery. As plant cane, these stools did not show field characteristics warranting selection.

Attempts to control pollination in cane breeding have not been successful, probably because of the difficulty of obtaining arrows when they are desired. For some unknown reason canes which are grown on the station grounds do not arrow well.

FORAGE-CROP WORK

Because of an increasing interest in and the potential importance of the livestock industry in the Virgin Islands, the growing of improved pastures and supplementary feed crops continues to be stressed by the station. Various grasses and feed crops should be available in order to meet the needs of the different local soil types. Legumes should be given special attention not only because of their value as a stock feed but also because of their ability to enrich the soil.

Experiments with alfalfa, *Lespedeza* sp., bur clover, alsike clover, crimson clover, red clover, and white clover indicate that these legumes are not well suited to local conditions. Sweetclover (*Melilotus alba*) proved to be more promising than the legumes above mentioned, but even its success is questionable.

The cowpea not only provides an excellent feed for stock but may also be used for human consumption in the form of both green and dried peas. The peas are high in food value and their use in the dietary should be encouraged. The cowpea thrives on a variety of soils. As a rule, it makes its best growth when it is planted during the period from July to December. It requires about 75 days to mature seed. During the year 10 to 14 tons of green feed were cut from an acre plat, and 14 bushels of peas were gathered. Varieties excelling at the station include Victor (fig. 2), Brabham, and Groit, in the order named.

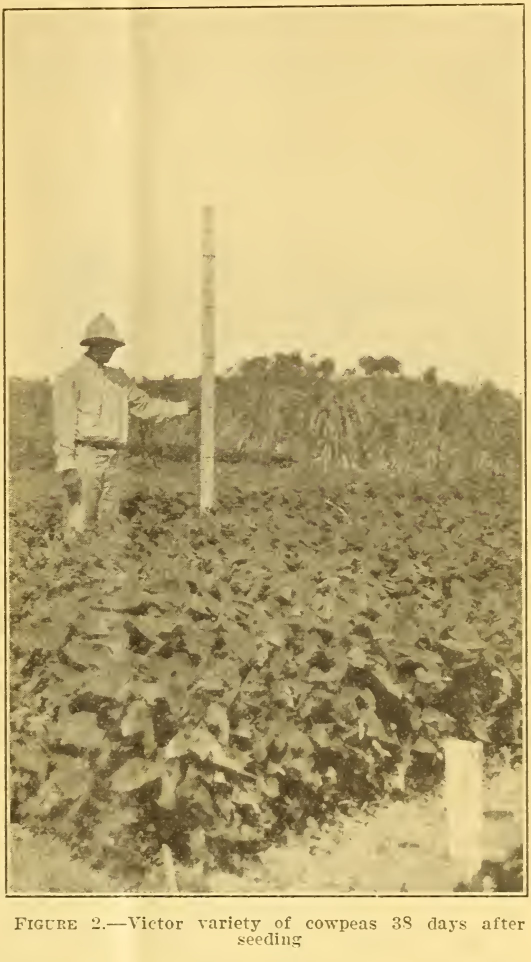
FIGURE 2.—Victor variety of cowpeas 38 days after seeding

The pigeon pea, a native of the Tropics, does well in the Virgin Islands and thrives there on a variety of soil types. It is drought resistant and furnishes an excellent feed for stock as well as a nutritious food for man. The crop will yield succulent forage if it is planted thickly and cut before developing a high fiber content. The varieties of pigeon pea which were grown in comparison during the year included Hilo, Indios, New Era, Parranetos, Cubanos, Pepinos, Manchados, No. 12, Calmenos, Indian, and Americanos. The only varieties grown for forage were New Era, which yielded 7 tons, and Indian, which gave 7½ tons, when harvested five months after they were planted.

The velvetbean promises to be a very valuable forage crop. It may be planted alone or in combination with such other crops as corn, sorghum, or sugarcane. The velvetbean is adapted to a wide variety of soils and when once established soon smothers out weeds and grasses. It has a high nutritive value as a stock feed and may be fed either green or dry. As a forage crop at the station it returned 7 tons of green forage in a period of 90 days. Osceola produced the heaviest crops of the various varieties planted at the station. It should be planted in the wet season.

A number of the wild or uncultivated legumes of the island were planted during the year. The common blue wis or butterfly-pea (*Clitoria ternatea*) and the small blue wis (*Teramnus labialis*) should be encouraged in every pasture.

Japanese or Uba cane is prolific and yields a good quality of forage. It should be encouraged as a supplementary feed for stock. Because of its drought-resistant qualities, leafiness, good habits of ratooning and tillering, and its ability to yield heavy crops, Japanese cane is preferable to the larger cane varieties. A plant-cane crop of Uba 796 which was harvested in 1926 yielded 27.81 tons of green feed; the first ratoon crop in 1927 gave 27.59 tons, the second ratoon in 1928 yielded 42.57 tons, and the third ratoon crop in 1929 gave 28.86 tons. Another planting of Uba 796 produced a plant-cane crop of 18.31 tons in 1927, a first-ratoon crop of 46.68 tons in 1928, and 17.48 tons in 1929.

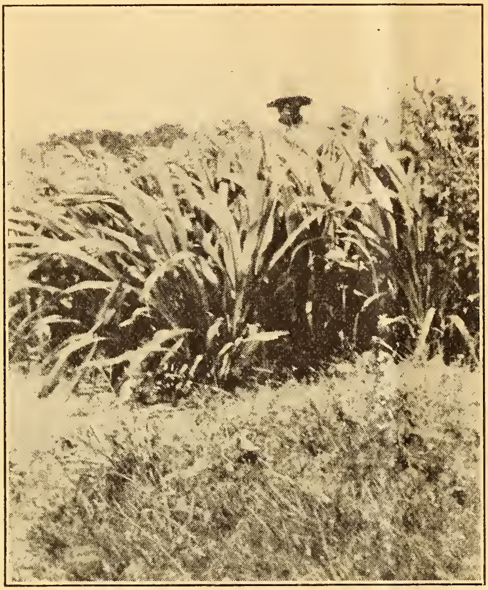

FIGURE 3.—Guatemala grass (*Tripsacum laxum*)

At the station Napier grass (*Pennisetum purpureum*) locally known as elephant grass, has yielded as much as 98 tons of green feed per acre in a period of 14 months. It makes a satisfactory soiling crop. Unfortunately, the grass develops much woody fiber with age and then becomes unpalatable. It should be cut and fed while young and tender. If the grass is allowed to stand until it becomes hard and woody, it should be run through a cutter and then fed.

Guatemala grass (*Tripsacum laxum*) is another rank-growing species that can be used as a soiling crop. (Fig. 3.) This grass was grown at the station and yielded at the rate of 37 tons of green feed per acre in a 12-month period.

The sorgos and grain sorghums constitute another group of forage plants that are well adapted to Virgin Island conditions. Sorghums which were planted at the station during the year and harvested 50 days later when the seed heads were just showing produced crops ranging from 7 to 14 tons per acre. Other plantings were cut 90 days after they were seeded. The seed crop was mature at this time and the yields of green forage varied from 9 to 21 tons per acre with a grain crop amounting from 8 to 60 bushels. Saccaline and Texas Seeded Ribbon cane gave the highest yields of forage and Blackhull kafir the heaviest crop of grain.

GRASSES

Since good pastures are of prime importance in livestock farming, the station continued to study the habits of many different kinds of grasses. Grasses that have long been established in the pastures include guinea grass (*Panicum maximum*), the so-called Mexican bluegrass (*Chloris paraguayensis*), Bermuda grass (*Capriola dactylon*), locally known as bay grass, Para grass or malojillo (*Panicum barbinode*), and St. Augustine grass (*Stenotaphrum secundatum*).[1]

Guinea grass is adapted to all the local soil types and grows luxuriantly everywhere. It can be grown from root divisions, or from seed, and is the most widely used of the feeds, both for pasturage and for cutting. A planting of this grass at the station was sufficiently high for cutting in 60 days and produced 37.64 tons of green feed within a year. Barbados sour grass (*Amphilophis ischaemum*) is another good pasture grass. It is rather slow to start, but when once established it is aggressive and withstands pasturing. It reaches a height of 2 feet, is drought resistant, and is relished by cattle. For purposes of pasturage, Para grass is best suited to the lower elevations and is partial to the more moist situations. When Para grass is well established, however, it is tolerant of dry conditions. A yield of 15 tons of green feed per acre was obtained from this grass at the station. *Chloris paraguayensis* and Bermuda grass are to be found growing in many pastures in St. Croix and constitute the chief source of grazing on some estates. Both grasses thrive in wet weather, but when they are grown on the dry areas they fail to produce much succulent feed during the dry season. Other grasses that are of value as pasturage, especially during relatively wet periods, include crucifixion grass (*Echinochloa colonum*), goose grass (*Eleusine indica*), *Leptochloa filiformis*, *Paspalum fimbriatum*, ten-per-cent grass (*Panicum reptans*), *Panicum adspersum*, smut grass (*Sporobolus indicus*), crabgrass (*Syntherisma sanguinalis*), and long grass (*Valota insularis*).

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[1] A variegated form of *Stenotaphrum secundatum* in the Virgin Islands is called "ribbon grass." It has no value as a pasture grass.

Kentucky bluegrass, tall meadow oatgrass, orchard grass, meadow fescue, carpet grass, and Vasey grass were introduced for trial, but failed to grow.

Dallis grass (*Paspalum dilatatum*) was introduced into the Virgin Islands through the insular experiment station of Porto Rico, and although it progressed slowly at first, it is now making good growth. Jaraguá (*Andropogon rufus*), obtained from the Bureau of Plant Industry, thrives during dry weather. It develops quickly and at the station has returned a crop of 15.68 tons of green feed per acre in 12 months. Centipede grass (*Eremochloa ophiuroides*) and Bahia grass (*Paspalum notatum*) were obtained from the Florida Agricultural Experiment Station. They start slowly, but withstand dry weather when once they become established. Igoka grass (*Capriola* sp.), which was received from the Bureau of Plant Industry, grows rapidly, spreads by means of rootstocks and surface runners, and is adapted to dry-weather conditions. The grass yielded at the rate of 11 tons of green feed per acre in a 16-month period when grown on a trial plat at the station. Kikuyu grass (*Pennisetum clandestinum*), an introduced variety, has not proved to be valuable in the dry climate of St. Croix. Mexican grass (*Ixophorus unisetus*) was introduced from the Hawaii Agricultural Experiment Station and is deserving of further trial. It is an annual that reseeds itself from year to year and produces an abundance of succulent feed during the wet season. Java grass (*Polytrias praemorsa*) was introduced through the Porto Rico Agricultural Experiment Station. It is a thrifty grass and develops a dense, cushiony turf, but is better adapted for use as a lawn grass than for feed.

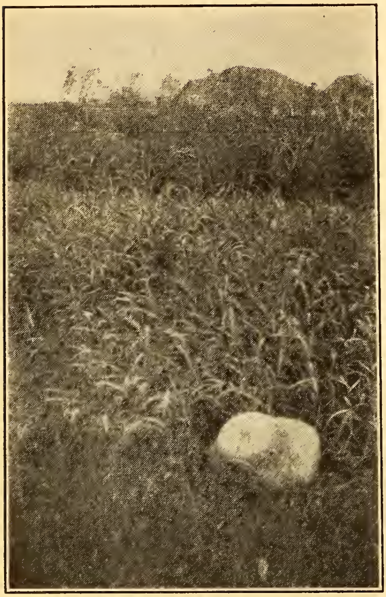

FIGURE 4.—Molasses grass (*Melinis minutiflora*)

Molasses grass (*Melinis minutiflora*), which is extensively grown as pasture grass in Brazil, was received for trial from the Bureau of Plant Industry. (Fig. 4.) It spreads rapidly and is a specially promising species because of its vigorous growing habits and ability to thrive during dry periods.

GREEN-MANURE CROPS

The use of a green-manure crop on sugarcane lands between harvesting and planting seasons should be encouraged. Growing green-manure crops is usually good farm practice, especially where continuous plantings of a single nonleguminous crop are made and where moisture control is of great importance. Studies were made of the adaptability of certain legumes for green-manure and cover-crop purposes. Sunn hemp (*Crotalaria juncea*) (fig. 5) makes an excellent cover crop and at the station yielded at the rate of 8.42 tons of green matter per acre in 60 days. The jack bean (*Canavalia ensiformis*) produced at the rate of 10 tons of green matter per acre in 90 days after it was planted. Cowpeas, velvetbeans, and pigeon peas might profitably be used for green-manuring purposes. Yields of green matter depend of course upon rainfall. Sunn hemp requires less moisture than do any of the other crops above mentioned.

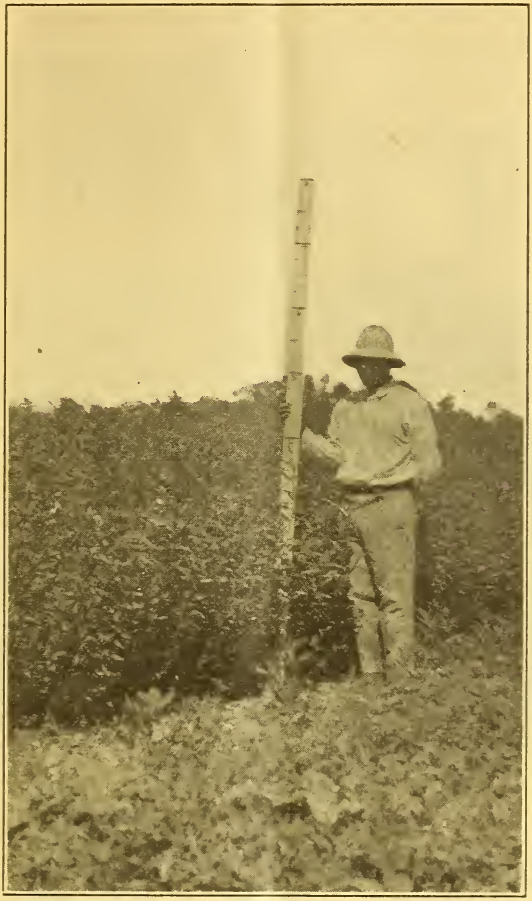

FIGURE 5.—Sunn hemp (*Cortalaria juncea*) 45 days after seeding

REPORT OF THE AGRICULTURIST FOR ST. THOMAS AND ST. JOHN

By W. M. Perry

The interest of the people of St. Thomas and St. John in the improvement of local agricultural conditions continues unabated. The interest is reflected to some extent in the increasing number of visitors to the extension office. The agriculturist was absent from the island for three months, but during the remaining nine months of the year 334 persons called at the extension office for general information pertaining to the farm. Planters are being advised to diversify their crops in order to encourage the more liberal use of vegetables in the dietary and to provide a surplus for marketing. The production of vegetables for export was held in abeyance the past season because of the continued low prices prevailing on the New York markets. As soon as market conditions warrant, the shipment of vegetables is to be resumed.

During the year a team of mules and a plowing equipment were purchased and plowing is now being done at cost for those desiring this service. With this innovation it is hoped that an improved farming industry will develop, exchanging the primitive methods so long in vogue for the more modern practices.

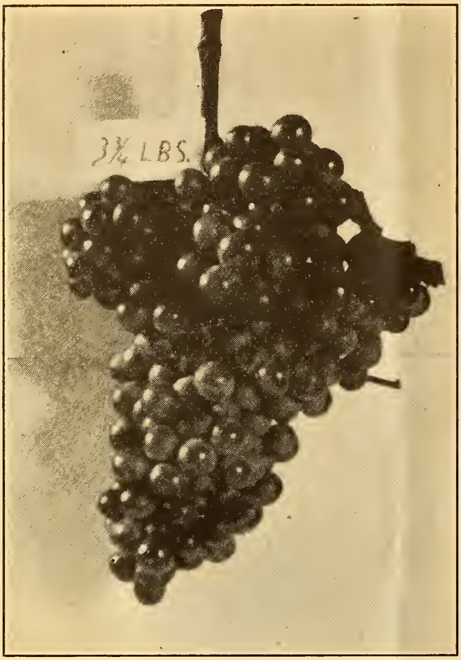

Figure 6.—Grapes grown in St. Thomas

MUNICIPAL NURSERY AND SCHOOL-GARDEN WORK

The experimental plats in the municipal nursery and school gardens again demonstrated the possibility of producing certain vegetables. Bermuda onions were planted in cooperation with the schools of St. John, the children doing all the work except that of the initial plowing. The sale of onions from two of the gardens amounted to $112. The quality of onions grown in St. John is exceptionally good. Being less perishable than are many of the other crops, onions are well adapted to conditions in St. John. The Bermuda onion was also given a fair trial in St. Thomas, where it proved to be a profitable crop. In the municipal nursery a ¼-acre plat yielded a return of $24.87, which was at the rate of $348 per acre.

Tomatoes again were profitable, although the market was confined to the town of St. Thomas. Sales of tomatoes from a one-fifth-acre plat in the municipal nursery amounted to $116, which was at the rate of $580 per acre. Many families also obtained excellent returns from the growing of tomatoes in their home gardens. A limited market in St. Thomas has tended to prevent growers from growing their crops on a larger scale.

RAPE

A quantity of Dwarf Essex rapeseed was purchased for distribution. In a poultry yard at the extension office rape reached a height of 5 inches three weeks after it was seeded. It was then cut and fed to poultry. In addition to its value as a rapidly growing green feed for poultry, rape could be advantageously used to vary the dietary of the people.

GRAPES

It was observed that a number of grapevines of the Muscat type or a similar variety grow on trellises throughout the town of St. Thomas. These vines produce fine fruit (fig. 6) and apparently are well suited to local conditions. An importation of 1.000 cuttings of the Muscat of Alexandria grape was therefore made from California through the Bureau of Plant Industry. These were set in the municipal nursery three months before the close of the fiscal year and are developing vigorously. It is planned to start a demonstration vineyard at the municipal nursery and to have smaller plantings of the same variety made in different parts of St. Thomas and St. John. All the plantings will be operated under the care of the agriculturist until they begin to bear, at which time the owners will have been trained to care for the vines properly. In addition to the establishment of demonstration vineyards, a few rooted cuttings are to be supplied to each person desiring them.

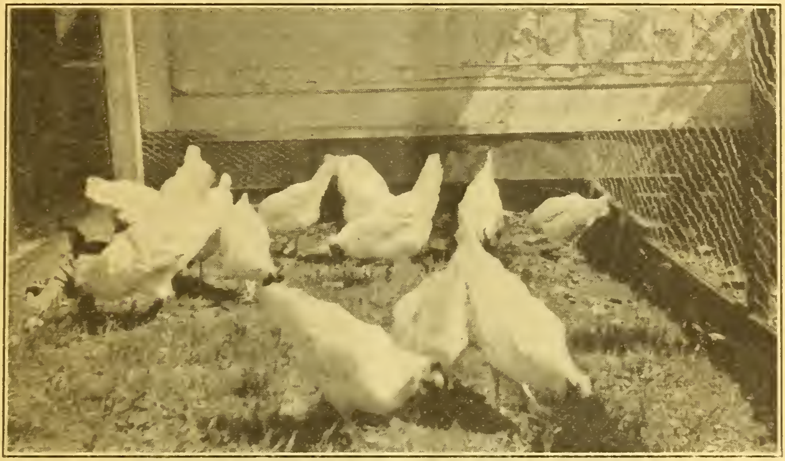

FIGURE 7.—Single Comb White Leghorns at the extension office in St. Thomas

POULTRY

One of the great needs of the islands is better poultry. Although some of the farmers have introduced superior strains of chickens, concerted action is needed in the work of improving the mongrel flocks of the islands. The agriculturist made a start in this direction during the year by bringing in a small flock of Single Comb White Leghorn hens from the experiment station in St. Croix. (Fig. 7.)

These fowls are confined in poultry runs belonging to the department of education and are conveniently located near the extension office. The birds are being trap nested and careful records kept of the cost of feeding, so that data may be had to indicate whether chickens can profitably be kept in confinement under local conditions. The small flock, consisting of 12 hens and a cockerel, returned a clear profit of $14.50 in the 6-month period ended June 30, 1929. The flock was doubled and 28 lots of eggs were sold for hatching purposes. In addition to the purchases of the Single Comb White Leghorns by the station some high-class Barred Plymouth Rocks were obtained for stock improvement by the department of education.

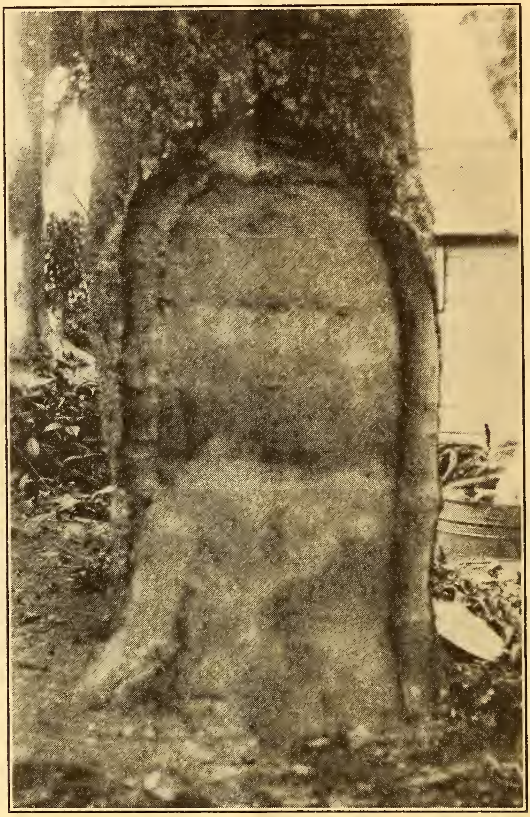

FIGURE 8.—An example of tree surgery

TREE SURGERY

Efforts to preserve the trees of the islands by surgical treatments are being more generally made than formerly. (Fig. 8.) The results of work done with trees in the parks, roadways, and streets are being watched with interest, and the methods used are being adopted by private property owners.

MISCELLANEOUS ACTIVITIES

In addition to his regular duties, the agriculturist cooperated with the department of education in its school-garden work, traveled 1,332 miles in making farm calls, attending agricultural meetings, and transacting other business connected with extension work, and supervised the sprayings or dippings in St. Thomas and St. John of all cattle intended for shipment to Porto Rico. In the latter interest three trips were made to St. John during the year.

METEOROLOGICAL OBSERVATIONS

By A. Bisserup

On September 12 and 13, 1928, the island of St. Croix was visited by a hurricane of unusual intensity. The storm struck the island about midnight of September 12, and the wind continued to blow with terrific force until nearly noon of the following day. The anemometer and the rain gauge were both blown down, and records of wind velocity and rainfall could not therefore be obtained. It is estimated, however, that the wind had a velocity of 130 miles per hour. The absolute maximum temperature for the year was 94° F., recorded August 6, 1928, and the absolute minimum temperature, 56°, was recorded January 30, 1929.

Table 3 gives a summary of the meteorological data for the year.

Table 3.—*Condensed meteorological data for the experiment station in St. Croix for the year ended June 30, 1929*

Date	Temperature		Total rainfall	Average daily velocity of wind	Monthly evaporation
	Maximum	Minimum			
1928	*°F.*	*°F.*	*Inches*	*Miles*	*Inches*
July	89.5	75.0	2.40	38.5	6.897
August	90.0	73.9	2.45	29.8	6.639
September	89.3	73.3	3.62	42.0	4.710
October	86.2	72.9	4.52	20.3	5.494
November	84.0	72.0	6.03	12.0	3.896
December	82.7	71.0	1.81	28.3	4.110
1929					
January	80.0	68.6	3.63	50.8	4.692
February	81.3	67.3	1.28	37.8	2.548
March	80.3	67.9	3.88	42.9	6.048
April	83.4	68.3	1.17	33.9	6.611
May	85.5	73.4	5.29	37.4	5.303
June	84.3	72.2	1.93	36.6	5.856
Total			38.01		62.804

U. S. GOVERNMENT PRINTING OFFICE: 1930